Advant® OCS
with Master software

AdvaBuild® Diagram Builder

Reference Guide

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Chapter 1 Introduction

1.1 Diagram Builder series

The Diagram Builder series consists of a family of applications and programs that provide assistance in the development of construction work. The products have a common user interface that greatly reduces the learning curve for new users of the system. The products include the Diagram Builder itself, the Electrical Diagram Builder Circuit, and the Electrical Diagram Builder Layout.

Certain basic functions, such as the forms and the symbol directories for the Electrical Diagram Builder Circuit and the Electrical Diagram Builder Layout, are identical. These functions create a common base that can be used by all programs in the Diagram Builder series.

1.2 Different parts of the manual

The manual consists mainly of function descriptions that briefly describe the usage of the product functions in a practical, work-oriented manner. The manual also contains a detailed description regarding settings and maintenance for the product.

1.3 Structure and definitions

The following concepts are used in this manual:

Pull down menus

These are the menus that can be “pulled down” from the top edge of the screen. With certain graphic systems the cursor must be placed at the top edge of the screen for the pull down menu bar to appear. The pull down menus are shown by pointing at a menu bar item.

Digitizer menus

Menus placed onto a menu plate (the digitizer) with numerous squares that display pictures (icons) or text. Each square corresponds to a function.

NOTE

Digitizer menus (respective tablet menus) are not provided within the Diagram Builder though described in this document for explanatory reasons. There are adequate screen menus, icon menus and dialog boxes available.

Screen menus

The menu that appears at the right-hand side of the screen. It is used for the functions that are not frequently needed. It is also used by many functions as a platform for choosing alternatives.

Drafting area

The area of the digitizer menu that contains no commands. This area represents the screen. The area to the right side of the broken line represents the screen menu.

Icons

Pictures in the digitizer menu, the pull down menu (for example line type), dialog boxes, or icon menus. These are used to emphasize a command in such cases where a picture or a graphic description is more suitable than words.

Icon menus

Menus in the shape of a dialog box that are used to choose commands via screen pictures (icons).

Dialog boxes

Dialog boxes are shown on the screen and may consist of an attribute value, system parameter, pictures, and so on. Generally these contain information that supplements the various menu items.

Directories

A directory is a specific section of the hard disk or diskette in which files can be placed. Directories are created using operating system commands or with the functions that are available for handling adjustments and symbol directories.

Point

When this request is made, point the mouse or digitizer cursor to the requested or desired location, or choose an object on the blueprint by moving the cursor into the drafting area; then press the mouse button.

ENTER, RETURN, <RET>

ENTER and RETURN represent the RETURN key on the keyboard. Alternatively, you may press the second button of the mouse or the cursor of the digitizer.

SPACE

SPACE represents the space bar on the keyboard.

Initial drawing

When a drawing is first created, a ground plan is installed in which the drawing environment is already configured. The ground plan may sometimes be called the prototype drawing.

Default

Preset basic value. A value that the system uses automatically if the user chooses (by pressing ENTER) not to specify another value in response to a prompt from the system.

Attribute

Most symbols have an area used for specifying terminal numbers, item designations, and so on. These areas are called the attribute of the symbol.

Chapter 2 Description of Functions in Diagram Builder

This chapter gives a brief description of how the Diagram Builder base functions are used. The end of this description contains a more in depth section on “Maintenance and Settings”.

2.1 Settings

This section contains functions that change the settings of variables. These variables influence the operation of the program.

Included here is a command for setting the application’s drawing configuration, as well as quick access to a number of useful AutoCAD variables.

2.1.1 CONFIG

Function: Activates a dialog box used for setting the variables that influence the operation of the program. The settings are more thoroughly described in the chapter “Settings and Maintenance”.

Access: Digitizer menu: SETTINGS, CONFIG.
Screen Menu: DIBCONFIG, CONFIG.

Procedure: Change the settings in the dialog box. Quit with OK or Cancel. OK saves the changes, CANCEL quits without saving.

2.1.2 DECIMALS

Function: Changes the number of decimals that AutoCAD shows and works with in texts. The setting is stored in the AutoCAD variable LUPREC.

Access: Digitizer menu: SETTINGS, DECIMALS.
Screen Menu: DIBCONFIG, DECIMALS.

Procedure: Select the number of required decimals.

Note: The AutoCAD variable DIMZIN influences how the decimals are copied. With a different setting in DIMZIN, it is possible to suppress zeros before and after the decimal point. For further information refer to the AutoCAD manual.

This setting does not affect the accuracy of AutoCAD object handling. This is always done with precision.

2.1.3 BLIPMODE

Function: Toggles between the value 0 and 1 for the variable BLIPMODE. The usage of BLIPMODE is described in the AutoCAD manual.

Access: Digitizer menu: SETTINGS, BLIPMODE.

2.1.4 ’SETVAR

Function: Changes or displays the current settings of AutoCAD’s system variables.

Access: Digitizer menu: SETTINGS, ’SETVAR.
Screen Menu: DIBCONFIG, ’SETVAR.

Procedure: Choose required system variable and select a new value, or select “?” to receive a list of current values.

2.1.5 PICKBOX

Function: Sets the values for the variable PICKBOX. The usage of PICKBOX is described in the AutoCAD manual.

Access: Digitizer menu: SETTINGS, PICKBOX.
Screen Menu: DIBCONFIG, PICKBOX.

Procedure: Select new values for the variable PICKBOX from the screen menu.

2.1.6 APERTURE

Function: Sets the values of the variable APERTURE. The usage of APERTURE is described in the AutoCAD manual.

Access: Digitizer menu: SETTINGS, APERTURE.
Screen Menu: DIBCONFIG, APERTURE.

Procedure: Select new values for the variable APERTURE from the screen menu.

2.1.7 SNAP

Function: Sets the values of the variable SNAP. The usage of SNAP is described in the AutoCAD manual.

Access: Digitizer menu: SETTINGS, SNAP.
Screen Menu: DIBCONFIG, SNAP.

Procedure: Select required settings for SNAP from the screen menu. SNAP can be transparent.

2.1.8 GRID

Function: Sets values for the variable GRID. The usage of GRID is described in the AutoCAD manual.

Access: Digitizer menu: SETTINGS, GRID.
Screen Menu: DIBCONFIG, GRID.

Procedure: Select required setting of GRID from the screen menu. GRID can be transparent.

2.2 EDIT

This section contains functions for editing objects and for drawing lines extending from other objects. Some of the functions listed here invoke AutoCAD standard functions; these are described in the AutoCAD manual.

The remaining functions are described below.

2.2.1 INTERSECT BREAK

Function:	Breaks up all elements located in the selected intersection point. Note that a polyline with an endpoint in the selected area cannot be broken up.
Access:	Digitizer menu: EDIT, INTERSECT BREAK. Screen Menu: EDIT, INTERSECT.
Procedure:	Select intersect point (the objectsnap “INTersect” is activated automatically).

2.2.2 CIRCLE SEGMENT

Function:	This command breaks up an arc or circle. The arc segment between a given start angle and end angle are taken away. The break occurs counter clockwise.
Access:	Digitizer menu: EDIT, CIRCLEBREAK. Screen Menu: EDIT, CIRCLE.
Procedure:	Select the object to break. Select start angle. Select end angle.

2.2.3 CONNECTION

Function:	Connects one line to another line that has a given radius. Wherever applicable, the command handles the elongating and shortening of the connection line.
Access:	Digitizer menu: EDIT, CONNECTION. Screen Menu: EDIT, CONNECT.
Procedure:	Select line to be connected. Point close to the endpoint to be connected. Point out the line to which the new line should be connected. Select radius of the arc.

2.2.4 LARGE RADIUS

Function: Connects two lines to an arc where the angle of the arc is 180 degrees or more. Compare AutoCAD’s Fillet where the angle of the arc should be less than 180 degrees.

The function also handles parallel lines.

Access: Digitizer menu: EDIT, LARGE RADIUS.

Screen Menu: EDIT, LARGERAD.

Procedure: Select the lines.

Where applicable, select the radius.

If the lines are parallel and do not lay in line, select the center point of the arc.

If the lines are parallel and lay in line, select the side where the arc is to be drawn.

2.2.5 ANGLE

Function: Draws a line in a given angle relative to a reference line.

Access: Digitizer menu: EDIT, ANGLE.

Screen Menu: EDIT, ANGLE.

Procedure: Select reference line.

Select start point of the line.

Select angle.

Select line length.

2.2.6 PARALLEL

Function: Draws a line parallel to a reference line.

Access: Digitizer menu: EDIT, PARALLEL.

Screen Menu: EDIT, PARALL.

Procedure: Select reference line.

Select start point for the new line.

Select length of the new line. If the distance is pointed out on the screen, the angle toward the start point is not considered, only the marked distance.

2.2.7 CHAMFERING (angle and dimensions)

Function: Draws a chamfer with the help of the AutoCAD command Chamfer. Rather than giving the distance of both sides, this function requires only that the distance on one side of the chamfer angle be given.

Access: Digitizer menu: EDIT, CHAMFER.

Screen Menu: EDIT, CHAMFER.

Procedure: Select the first line to be chamfered.

Select the second line to be chamfered.

Select chamfer width.

Select chamfer angle.

2.2.8 EXTEND

Function:	Extends a line a specified distance (or shortens it if a negative value has been given). The function can also extend both ends of a line simultaneously.
Access:	Digitizer menu: EDIT, EXTEND. Screen Menu: EDIT, EXTEND.
Procedure:	Select which line should be extended, or press RETURN to extend both ends simultaneously. Specify how long each end should be extended.

2.2.9 EXTEND2

Function:	Extends (or shortens) a line to the intersection point of a visible or hidden line. This command is a mixture of AutoCAD’s Trim- and Extend- (for lines) and chooses the alternative that best suits a particular situation.
Access:	Digitizer menu: EDIT, EXTEND2. Screen Menu: EDIT, EXTEND2.
Procedure:	Point at the line to be extended (or shortened). Point close to the endpoint to be extended. Specify the startpoint for the desired boundary line, or press RETURN to choose an existing boundary line. Point at the second endpoint of the desired line (only if an existing line has not been chosen previously by pressing RETURN). Note: The existing line that the chosen line should be extended or shortened to does not necessarily have to pass through the point of intersection. The function calculates the extension of the boundary line.

2.2.10 JOIN

Function:	Joins two lines to one.
Access:	Digitizer menu: EDIT, JOIN. Screen Menu: EDIT, JOIN.
Procedure:	Select the first line (close to the endpoint to be moved). Select the second line (close to the endpoint to be moved). A new line will now be drawn so that the start point becomes the farthest endpoint of the first line and the end point becomes the farthest endpoint of the second line. “Farthest” means the endpoint that has the greatest distance to the point where the line was selected.

2.2.11 LEXPLODE

Function: Explodes a block so that the part in the block maintains the properties (layer, linetype and color) that it had prior to the explosion of the block. It is possible to choose whether the values of attributes should be retained or not.

Access: Digitizer menu: EDIT, LEXPLODE.

Screen Menu: EDIT, LEXPLODE.

Procedure: Select the block to be exploded.

Note: The function may also be used for exploding measurements and hatchings.

2.2.12 HELP LINE

Function: Draws a horizontal or vertical help line that passes through a selected point and stretches to the drawing’s borders (LIMITS).

Access: Digitizer menu: EDIT, HELPLINE.

Screen Menu: EDIT, HELPLINE.

Procedure: Select the point the line is to pass through. Instead of selecting a point, you may also press RETURN to change between horizontal and vertical orientation of the line.

2.3 TEXT

Functions used for creating, editing, and altering the appearance of the text. There are also functions used for reading in and printing out text to and from external files.

The file “styles.lst”

In the program code tree, under the directory MSC there is a file called STYLES.LST. This file contains a list that tells the application whether or not a font file allows the text to be written vertically. This information is used by the function that manages text. You can add font files to this list or change the setting of existing font files. This setting does not have to be changed if you use the basic settings that are included in the application.

2.3.1 TEXT/DTEXT

Function: These are the two main functions for typing in text. They have a screen menu by which AutoCAD’s different text options can be set.

The height of the text is adjusted so that when plotting with the proper pen, the text height will be correct. For example, for 3.5 mm text, the height is set to 3.15, that is, the height minus the pen width.

Access: Digitizer menu: TEXT, (D)TEXT.

Screen Menu: TEXT, (D)TEXT.

Procedure: If no option should be set, the start point is specified for the text.

Select angle for the text.

Note:
For further information about the commands Text and Dtext, as well as all options shown on the screen menu, see the AutoCAD manual.

2.3.2 STYLE

Function: This function's sub alternatives are shown on a screen menu. The alternatives are as follows:

STYLE
Chooses another text style.

LISTING
Lists all text styles defined in the drawing.

Text heights from 1.8 - 10.0
This sets current height of text to a specified value. Note that the text height compensates for pen width. A text height of 5.0 mm is equal to 4.5 mm in AutoCAD units.

FREE
Sets the current text height to 0. This means that you will be prompted for a text height when inserting text.

Access: Digitizer menu: TEXT, Style.

Screen Menu: TEXT, Style.

Procedure: Select desired function from the screen menu.

Select desired alternative shown on the screen menu.

2.3.3 EDITING

Function: This function provides access to the text editing functions via a screen menu. You can edit text, change height, slant, write in and read out text.

Access: Digitizer menu: TEXT, Editing.

Screen Menu: TEXT, Edit.

DDEDIT

Access: Edits text. For further information, see the AutoCAD manual.

Procedure: Select a text to edit.

REPLACE

Function: Replaces one word with another in a number of texts.

Procedure: Specify the texts for which the replacement is to occur.

Specify the old text.

Specify the new text.

HEIGHT

Function: Changes text height for a number of texts.

Procedure: Select the texts in which the height should be changed.

Select new text height from the screen menu.

The alternative FREE allows the user to specify text heights that do not exist on the screen menu.

TEXT STYLE

Function:	Changes text style for a number of texts.
Procedure:	Select texts for which the text style is to be changed. Specify new text style.

OBLIQUE ANGLE

Function:	Changes oblique angle for a number of texts.
Procedure:	Select texts for which the oblique angle should be changed. Specify new oblique angle.

WIDTH

Function:	Changes the width factor for a number of texts.
Procedure:	Select texts for which the width factor should be changed. Specify the new width factor.

WRITE

Function:	Writes a selected text to a file that can be edited with a text editor.
Procedure:	Mark the text that should be written to the file. Select a filename for the text that should be written to the file.

READ

Function:	Reads an ASCII-text from a file and writes it to the drawing. It is possible to decide how the text should be written in, that is, start point (Center/Middle/Right), text rotation angle, distance between the lines, the first line of text to read, the number of lines to read in, if all lines are to be underlined, if all lines should be overstrike, if the letters are to be upper- or lowercase, if a column setting is to be performed.
Explanation:	Select filename on the file from which the text is to be read. Give the start point or Center/Middle/Right. Give rotation angle. Choose whether to change text options. These are: Specify distance between lines. First lines to be read in. Number of lines to be read in. Underlining of all lines. Overstriking of all lines. Conversion of all letters Uppercase/Lowercase/No. Divide the text in columns. Distance between columns. Number of lines per column.

2.4 FORMS

Contains functions that manage drawing forms and scale factor.

2.4.1 IMPORTANT CONCEPTS

Format type

Type of format. Example of common format types: A3L (A3 Landscape) and A4P (A4 Portrait). This type of format is read by the Plot function.

Form

Name of a Form Definition. A form definition consists of information about format type as well as a description of how the form should be drawn up (title block, revision block, folding marks, and so on). The name of the form does not have to be the same as the format type.

Note: The form definition is saved in a file with the extension ".frm" in the directory for the form's setup.

Form Setup

Several forms collected in one "setup". Each setup corresponds to a library in an MLUSER-tree.

2.4.2 INSERT

Function:	Draws a drawing form according to the description in the form definition selected from the form setup.
Access:	Digitizer menu: FORMAT, FORMAT, Insert. Screen menu: FORMAT, Insert.
Procedure:	Select form setup. Select which of the forms in the form setup should be drawn. Note: If there is only one form setup, the program does not prompt for a form setup. The setting "Explode form when inserted" influences how the form is inserted in those cases where it is stored as a block.

2.4.3 QUICK

Function:	Draws a drawing form according to the description in the configuration.
Access:	Screen menu: FORMAT, Quick.

2.4.4 EDIT SETUP

Function: Creates and removes a form setup. When a new form setup should be created, there is an opportunity for copying an old setup.

Access: Digitizer menu: FORMAT, FORMAT, Edit.lib.

Screen menu: FORMAT, Edit.lib.

Note: Forms can only be chosen for copying if there is more than one setup.

2.4.5 EDIT FORM DEFINITIONS

Restriction:
This function must not be used within the Diagram Builder integrated in AdvaBuild!

Function: Creates, changes and removes form definitions.

Access: Digitizer menu: FORMAT, FORMAT, Edit.

Screen menu: FORMAT, Edit.

Procedure: Give desired settings in the dialog box.

Save the setting with the function “Save Data”.

Quit with OK.

Note: If the settings that can be done are not enough, it is possible to save the form instead as a block (see “As Block”).

2.4.6 CLEAR

Function: Removes all objects on the layer where the drawing form is inserted. Purges (wipes clean) all settings that have been made during the creation of the drawing form.

Access: Digitizer menu: FORMAT, FORMAT, Clear

Screen menu: FORMAT, Clear.

Procedure: Specify if the drawing frame is to be removed.

Select which layer the details in the form are to be placed on.

2.4.7 Format type

Function: Specifies the drawing format type. This setting is read by the plotting function. The function is used when you want to change without drawing up a drawing form.

Access: Digitizer menu: FORMAT, FORMAT, Formtype.

Screen menu: FORMAT, Formtype.

Procedure: Select new format type from the list (“.” deregisters the format type).

2.4.8 AS BLOCK

Function: Saves chosen objects in a block so that the block may be inserted as a form on a later occasion. The block is saved in the same directory and with the same name (but with the extension ".DWG") as the form definition to which the block belongs.

Access: Digitizer menu: FORMAT, FORMAT, Save as blk.

Screen menu: FORMAT, Save as blk.

Procedure: Select which objects should be included in the form (the block).

Select which form setup the form should be saved in.

Select which form definition the block should belong to.

Note: The setting "Explode form when inserted" influences how the form is inserted in those cases where it is stored as a block.

2.4.9 TITLEBLK

Restriction:
This function must not be used within the Diagram Builder integrated in AdvaBuild!

Function: Saves a title- or revision-block in a form setup directory.

Access: Digitizer menu: FORMAT, FORMAT, Titleblk.

Screen menu: FORMAT, Titleblk.

Procedure: Select which entities should be included in the title block (the block).

Select insertion point.

Select which form setup the title block should be saved in.

Select block name.

2.4.10 EXCHANGE TITLE BLOCK

Function: Swaps one title block with another. The attribute values are moved from the old head to the new title block according to a table defined in a file with the extension .TBL.

Access: Digitizer menu: FORMAT, FORMAT, Ex title.

Screen menu: FORMAT, Ex title.

Procedure: Select the block to swap.

Note: In the left column of the file, select the TAGs in the old block. In the right column select TAGs for the new block.

2.4.11 SHOW SCALE FACTOR

Function: Prints out the drawing's scale factor.

Access: Digitizer menu: FORMAT, FORMAT, SCALE, Show

Screen menu: FORMAT, SCALE, Show

2.4.12 CHANGE SCALE FACTOR

Function: Changes the drawing’s scale factor. The function also changes the scale factor of all variables that are dependent on the scale factor and, if desired, can rescale the drawing frame.

Access: Digitizer menu: FORMAT, FORMAT, SCALE, Change

Screen menu: FORMAT, SCALE, Change

Procedure: Select new scale factor.

Decide whether the drawing frame should be rescaled.

Specify which layer the drawing frame lies on if it is to be rescaled.

Note: This function is an aid when preparing prototype drawings or rescaling empty drawings with existing forms. The function does not correctly change the scale factor of all elements in a complete drawing.

If the scale factor is set to “0.0”, the program will prompt for the scale factor (and thereby change the scale factor) when the drawing is to be started in subsequent sessions. This setting is good to have for prototype drawing.

2.5 VIEWS

2.5.1 CREATE

Function: Creates four views according to European (E) or American (A) view placing. The view in the bottom right corner is an ISO view.

Access: Digitizer menu: FORMAT, FORMAT, VIEWS, CREATE:

Screen menu: FORMAT, VIEWS, CREATE:

Procedure: Change to “paperspace” by setting the setvar variable TILEMODE to the value 0 (with the AutoCAD command Tilemode).

Insert a form.

Select whether the views are to be placed according to European (E) or American (A) standards.

Specify the insertion point of the method symbol.

2.5.2 ADJUST

Function: Adjusts views in paperspace so that they fall into the right position in relationship to each other via a common point.

Access: Digitizer menu: FORMAT, FORMAT, VIEWS, ADJUST:

Screen menu: FORMAT, VIEWS, ADJUST:

Procedure: Select the view to be adjusted by pointing on the frame of the view.

Select reference view by pointing at the frame of the view.

Select the point that is to be located on the same “level” in x- or y-direction. The function now scans the view to be adjusted to its right position.

2.6 REVISION

2.6.1 MARKING

Function:	Inserts a revision mark in the drawing.
Access:	Digitizer menu: FORMAT, REVISION, MARKING Screen menu: REVISION, MARKING
Procedure:	Select insertion point for the marking. Select revision numbers. Note: The block name can be changed in the configuration of the drawing.

2.6.2 LIST ROW

Function:	Inserts a row in the revision list.
Access:	Digitizer menu: FORMAT, REVISION, LIST ROW Screen menu: REVISION, LIST ROW
Procedure:	Select insertion point for the row. Fill in the values in the dialog box. Note: The block name can be changed in the configuration of the drawing.

2.7 ARCHIVE SYSTEM

Functions for transferring information between the title block and the database.

A .DMI file is a data file in the same directory and with the same name as the drawing but with the extension .DMI. This file contains information about the drawing stored in the archive system.

Restriction:
This function must not be used within the Diagram Builder integrated in AdvaBuild!

2.7.1 DMIN

Function:	Updates the drawing head with the information contained in the drawing's .DMI file if such a file exists. The program can be configured so that it knows the name of the block that contains the title block. This makes it unnecessary to select the block manually. For further information see the section on Configuration.
Access:	Digitizer menu: FORMAT, DMIN Screen menu: FORMAT, DMIN
Procedure:	If necessary, point at the drawing head. The function updates the title block with information from the .DMI file.

2.7.2 DMOUT

Function:	Updates the drawing’s .DMI file, if such a file exists, with the information contained in the drawing head. The program can be configured so that it knows the name of the block that contains the drawing head. This makes it unnecessary to point out the block. For further information see the section on Configuration.
Access:	Digitizer menu: FORMAT, DMOUT Screen menu: FORMAT, DMOUT
Procedure:	If necessary, select the title block. The function updates the .DMI file with information from the title block.

2.8 PLOTTING

Functions that steer the plotting to the correct printer with the correct scale factor and appearance. It is also possible to specify whether hidden lines removal should be used (HIDE). Before the function can be used, AutoCAD must be configured for the printers that are to be used and settings must be made for the printers for each format. For further information, see the Settings section.

2.8.1 DIBPLOT

Function:	Prints out the drawing that is being edited to one of the printers for which AutoCAD has been configured.
Access:	Digitizer menu: FORMAT, DIBPLOT, Select scale and appearance according to the specifications below. Screen menu: DIBPLOT, Select scale and appearance according to the specifications below.
Procedure:	Decide if the plotting is to be made with hidden lines removal using the command Hide On/Off. Select scale and appearance from the screen menu. Select which plotter should perform the printing. If necessary, select which setting (PCP file) should be used if this hasn’t already been done (FIT only).

2.8.1.1 Selecting scalefactor and which part to plot

Note:
Within the Diagram Builder integrated in AdvaBuild, all alternatives behave identically.

Scale factor

SCALE	Prints out the drawing with a pre-selected scale factor.
FIT	Prints out the drawing as large as possible. Proper scale factor not used.

Part of drawing to plot

LIMITS (or L)	Selects a detail of the drawing that lays inside AutoCAD’s LIMITS.
DISPLAY	Selects to include everything visible on the screen.
EXTENTS (or E)	Selects the smallest detail of the drawing possible in which everything is still included.
VIEW	Selects to include everything visible in a named view.
WINDOW	Selects to include everything visible in a specified window.

2.8.2 HIDE On/Off

Function:	Sets whether it should be possible for the plotter to use hidden lines removal.
Access:	Digitizer menu: FORMAT, DIBPLOT, On/Off Screen menu: DIBPLOT, On/Off Note: This setting should be made before the plotting is started. It does not work together with AutoCAD’s ordinary Plot command.

2.8.3 CMDDIA

Function:	This variable specifies whether or not to work with a dialog box while plotting with AutoCAD’s ordinary Plot command (1=dialog box, 0=command from the keyboard).
Access:	Digitizer menu: FORMAT, DIBPLOT, CMDDIA Screen menu: DIBPLOT, CMDDIA

2.8.4 PLOT

Function:	AutoCAD’s command for plotting. You can choose whether or not to work with a dialog box with the variable CMDDIA.
Access:	Digitizer menu: FORMAT, DIBPLOT, PLOT Screen menu: DIBPLOT, PLOT:
Procedure:	Set desired value of the variable “CMDDIA”. Activate the command. Note: For further information see the AutoCAD manual. Note that the settings can be saved in a configuration file (PCP file).

2.9 DIMENSIONING

Functions for creating dimensions can be done according to the standard ISO 129. The dialog for the Dimensioning command follows AutoCAD’s dialog for dimensioning as far as possible.

Since the standard is not completely covered with AutoCAD’s dimensioning, there are some commands that have a different dialog.

Among these are superimposed running dimensioning and two different types of diameter dimensioning. Common to all dimensioning types is the input of dimension text and placing of the dimension line.

2.9.1 DIMENSION LINE PLACEMENT

The placement of the dimension line for linear dimensions can be performed in three different ways:

1. Specify a distance from the object.

When the dimension line is to be placed, a screen menu is shown with the following alternatives:

8 10 12 Free Relative

8, 10, 12 give a distance of 8, 10, and 12 mm respectively from the object.

Select desired distance (8, 10, or 12) from the screen menu.

Free prompts for a distance (arbitrary distance can be specified).

The function asks which side of the object the dimension line should be set on. This is specified by pointing on the desired side.

2. Specify a distance from a separately given point (Relative).

Select Relative from the screen menu.

The function prompts for a distance from a relative point. It is possible to choose 8, 10, or 12 from the screen menu, to write in a desired distance, or to choose a distance by specifying two points.

The function then prompts for a relative point. It is this point that the earlier given distance should originate from.

3. Specify a point the dimension line should pass through.

Select the point the dimension line (or its extension) should pass through.

2.9.2 INPUT OF DIMENSION TEXT

The dimension’s measure value is displayed with ten decimal points. The appearance of the dimension text in the drawing is shown below. Choose from the following alternatives:

1. Press RETURN.

Check the dimension text shown either directly or after using any of the alternatives shown below.

2. Write in a new dimension text.

If this is done, the dimension text will not be updated if the measure is “STRETCHED”.

3. PADD or PSUB from the screen menu.

Increase or decrease the number of decimals in the dimension text.

4. PREFIX and/or SUFFIX from the screen menu.

Allows input of prefix and/or suffix to the dimension text.

Dimension texts

AutoCAD interprets text dimensions in a particular way:

- An empty text (RETURN only) is interpreted as if the measure value should be displayed instead.
- The character combination “<>” is interpreted as if these characters ought to be replaced by the measure value. This can occur in the middle of a text.

In both cases, the measure value follows if the measure is “STRETCHED”. If a measure value with numbers is written instead, the measure value will be “CONSTANT”.

Example: The text “123.45 mm” is constant regardless of whether the measure is “STRETCHED” or of how long the measure actually is.

The text “<> mm” will be displayed as “12.34 mm” if the measure is that long, but will change accordingly as the measure is “STRETCHED”.

2.9.3 HORIZONTAL

Function: Makes a linear dimension with a horizontal dimension line.

Access: Digitizer menu: DIMENSIONING, Horizontal
Screen menu: MDIM, Horizontal

Procedure: Select start point for the first extension line or press RETURN to choose a line.

If the start point was given above, select the start point for the second extension line.

If RETURN was chosen, select the line to be dimensioned.

Place the dimension line. For further information see the introduction to DIMENSIONING.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.4 VERTICAL

Function: Makes a line dimension with a vertical dimension line.

Access: Digitizer menu: DIMENSIONING, Vertical
Screen menu: MDIM, Vertical

Procedure: Select start point for the first extension line or press RETURN to choose a line.

If the start point was given above, select the start point for the second extension line.

If RETURN was chosen, select the line to be dimensioned.

Place the dimension line. For further information see the introduction to DIMENSIONING.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.5 PARALLEL

Function: Makes a line dimension with a dimension line parallel to an imagined line through the specified extension line’s start point.

Access: Digitizer menu: DIMENSIONING, Parallel
Screen menu: MDIM, Parallel

Procedure: Select start point for the first extension line or press RETURN to choose a line.

If the start point was given above, select the start point for the second extension line.

If RETURN was chosen, select the line to be dimensioned.

Place the dimension line. For further information see the introduction to DIMENSIONING.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.6 ROTATED

Function: Makes a line dimension with a dimension line drawn perpendicular to the extension lines. The angle of the dimension line is specified separately.

Access: Digitizer menu: DIMENSIONING, Rotated

Screen menu: MDIM, Rotated

Procedure: Select the angle for the dimension line.

Select startpoint for the first extension line or press RETURN to choose a line.

If the start point was given above, select the start point for the second extension line.

If RETURN was chosen, select the line to be dimensioned.

Place the dimension line. For further information see the introduction to DIMENSIONING.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.7 Hbase line

Function: Dimensions according to the method for superimposed running dimensioning. Horizontal base line.

Access: Digitizer menu: DIMENSIONING, HSUPRUN

Screen menu: MDIM, HSUPRUN

Procedure: Select start point of the extension line for the dimension origin. If an Hbase line was the last thing to be drawn, it is possible to continue drawing by pressing RETURN when prompted for the first extension line and then pointing at the extension line for the dimension origin.

Specify the second extension line.

Place the dimension line. For further information see the introduction to DIMENSIONING.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

Give start point for the next extension line and edit the dimension text. Repeat this procedure until all the desired dimensions have been drawn.

Press RETURN to quit the command.

Note: Extension lines can be specified on either side of the first extension line. This can be done alternately.

The program can be configured either for printing the text parallel to the dimension line or perpendicular to it (see Configuring).

2.9.8 Vbase line

Function: Dimensions according to the method for superimposed running dimensioning. Vertical base line.

Access: Digitizer menu: DIMENSIONING, VSUPRUN

Screen menu: MDIM, VSUPRUN

Procedure:	Select start point of the extension line for the dimension origin. If a Vbase line was the last thing to be drawn, it is possible to continue drawing by pressing RETURN when prompted for the first extension line and then pointing at the extension line for the dimension origin. Specify the second extension line. Place the dimension line. For further information see the introduction to DIMENSIONING. Edit the dimension text. For further information see the introduction to DIMENSIONING. Give start point for the next extension line and edit the extension text. Repeat this procedure until all the desired dimensions have been drawn. Press RETURN to quit the command. Note: Extension lines can be specified on either side of the first extension line. This can be done alternately. The program can be configured either for printing the text parallel to the dimension line or perpendicular to it (see Configuring).

2.9.9 Dparallel

Function:	Gives a diameter dimension with the dimension line parallel to the specified startpoints of the extension lines. This is used, for example, to measure a diameter in a view that is not a circle or circlearc, such as a shaft.
Access:	Digitizer menu: DIMENSIONING, Dparallel Screen menu: MDIM, Dparallel
Procedure:	Select startpoint for the first extension line or press RETURN to choose a circle or circle arc. If start point has been given, select the startpoint for the second extension line. If RETURN has been pressed, select a circle. The dimension line will be drawn parallel to the tangent of the point where the circle was selected. Place the dimension line. For further information see the introduction to DIMENSIONING. Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.10 Mleader

Function:	Makes a leader line.
Access:	Digitizer menu: DIMENSIONING, Mleader Screen menu: MDIM, Mleader
Procedure:	Select startpoint for the leader (insertion of arrow) or press RETURN to choose a circle or circle arc. Select the positioning of the leader by pointing at the point it should pass through. The drawn segment can be removed with UNDO. Quit with RETURN. Write in the desired text or write VERTICAL to print the text vertically. If several text lines are desired, select the first or press RETURN to quit. If several text lines have been selected, the system will prompt for the approximate direction for the drawing of these.

2.9.11 Angle

Function: Makes an angle dimensioning. This can be used in three different instances:

1. Angle between two lines
2. Complete angle of an arc
3. Indicated angle of a circle

Access: Digitizer menu: DIMENSIONING, Angular

Screen menu: MDIM, Angular

Procedure: Select the first line (or at a point on an arc or circle).

Select the second line (if arc or circle has not been chosen).

Select the line’s placement or, if an angle dimension has been made between two lines, press RETURN to estimate the large angle (180 degrees).

If dimensioning is done between two lines, the placement of the dimension line determines which angle (of 4) to calculate.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.12 RAD1

Function: Makes a radius dimensioning with the dimension line drawn from the center. The arrow will be in contact with the point where the arc/circle was chosen.

Access: Digitizer menu: DIMENSIONING, Rad1

Screen menu: MDIM, RAD1

Procedure: Mark which arc or circle should be dimensioned.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.13 RAD2

Function: Makes a radius dimensioning with the dimension line drawn from the center and extended an arbitrary distance.

Access: Digitizer menu: DIMENSIONING, Rad2

Screen menu: MDIM, RAD2

Procedure: Mark which arc or circle should be dimensioned.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

Point out the length of the leader.

Note: With the AutoCAD variable DIMTOH it is possible to decide whether the leader should extend a horizontal “tongue” for the dimension text to be printed on. Use the Setvar command to change this setting.

DIMTOH = 0, the text is aligned with the dimension line.

DIMTOH = 1, forces the text to be horizontal.

2.9.14 DIA1

Function: Makes a diameter dimensioning and places the dimension text in the center between the dimension arrows.

Access: Digitizer menu: DIMENSIONING, Dia1

Screen menu: MDIM, DIA1

Procedure: Select circle or circle arc to be dimensioned. Dimensioning can be inserted in different angles depending on the selected object.

2.9.15 DIA2

Function: Makes a dimensioning diameter with the dimension line drawn from the center and extended an arbitrary distance.

Access: Digitizer menu: DIMENSIONING, Dia2

Screen menu: MDIM, DIA2

Procedure: Mark which arc or circle should be dimensioned.

Edit the dimension text.

For further information see the introduction to DIMENSIONING.

Point out the length of the leader.

Note: With the AutoCAD variable DIMTOH it is possible to decide whether the leader should extend a horizontal “tongue” for the dimension text to be printed on. Use the Setvar command to change this setting.

DIMTOH = 0, the text is aligned with the dimension line.

DIMTOH = 1, forces the text to be horizontal.

2.9.16 Base line

Function: Draws a base line dimensioning originating from a vertical, horizontal, rotated, or parallel dimension.

Access: Digitizer menu: DIMENSIONING, Base line

Screen menu: MDIM, BASLINE

Procedure: If the last drawn entity is one of the above mentioned dimensioning types, specify the next extension point. Otherwise select a new base dimensioning by pressing RETURN and pointing at it.

The last drawn entity will be highlighted.

Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.17 Continue

Function:	Draws a continuing dimension originating from a vertical, horizontal, rotated, or parallel dimension measure.
Access:	Digitizer menu: DIMENSIONING, Continue Screen menu:MDIM, CONTINUE
Procedure:	If the last drawn entity is one of the above mentioned dimensioning types, specify the next extension point. Otherwise select a new base dimensioning by pressing RETURN and pointing at it. The last written entity will be highlighted. Edit the dimension text. For further information see the introduction to DIMENSIONING.

2.9.18 Theoretical dimension

Function:	Draws a box around the dimension text to indicate that there is a Form- and Phase tolerance in connection with this dimension.
Access:	Digitizer menu: DIMENSIONING, Theoretical dimension Screen menu: MDIM, TEORET.
Procedure:	Point at the dimension.

2.9.19 Non-scaling dimension

Function:	Draws a line under the dimension text to indicate that this dimension is non-scaling. This is used, for example, to dimension a shaft with a break.
Access:	Digitizer menu: DIMENSIONING, Non-scaling dimension Screen menu: MDIM, NON SCALE
Procedure:	Point at the dimension.

2.9.20 EDITING COMMANDS

This group of commands is used for editing one or several dimensions. There are commands for rotating the dimension texts, slanting whole dimension, changing the DIM variable, changing the dimension text, and so on.

2.9.20.1 Break Line

Function:	Breaks up extension lines when these cross each other or a dimension line.
Access:	Digitizer menu: DIMENSIONING, Break Line Screen menu: MDIM, BREAK LINE
Procedure:	Select the extension that should be broken. Specify the point at which the line should be broken, or press RETURN to break the extension line towards a text. Note: Dimension lines are not generally broken; when they are crossed by an

extension line, the extension line is broken. If you want to break a dimension line, you must first explode a dimension. To do so use, for example, the function LEXPLODE.

2.9.20.2 Edit dimensioning

Function: Changes the dimension text of an existing dimension.

Access: Digitizer menu: DIMENSIONING, Edit dimensioning
Screen menu: MDIM, EDITTEXT

Procedure: Select the dimension for which the text should be changed.
Enter new text.
Note: See the introduction to DIMENSIONING for a description of how dimension text should be selected.

2.9.20.3 HOMETEXT

Function: Restores one or several dimension texts to the position specified through the DIM variable settings.

Access: Digitizer menu: DIMENSIONING, HOMETEXT
Screen menu: MDIM, HOMETEXT

Procedure: Select one or several texts to be restored.

2.9.20.4 OBLIQUE

Function: Changes the angle of the extension line for one or several dimensions.

Access: Digitizer menu: DIMENSIONING, OBLIQUE
Screen menu: MDIM, OBLIQUE

Procedure: Specify a slanting angle.
Select one or several dimensions to slant.

2.9.20.5 NEWTEXT

Function: Replaces the dimension text of one or several dimensions.

Access: Digitizer menu: DIMENSIONING, NEWTEXT
Screen menu: MDIM, NEWTEXT

Procedure: Select new text for the chosen dimension. Press RETURN to choose an estimated dimension value.
Choose one or several dimensions that should receive the new text.

2.9.20.6 UPDATE

Function:	Changes the appearance of one or several dimensions to the specifications indicated in the DIM variable settings. For information about the DIM variable, see the AutoCAD manual. UPDATE can also be used for restoring the look of a simple base line dimension after it has been edited.
Access:	Digitizer menu: DIMENSIONING, UPDATE Screen menu: MDIM, UPDATE
Procedure:	From the screen menu specify whether the object to be updated is a base line or ordinary dimensioning. Ordinary: Mark all dimensions to be updated. If entities that are not dimensions are included in the choice, these will be ignored. Base line: Mark all dimension details of the simple base line dimension.

2.9.20.7 TROTATE

Function:	Changes the orientation of the dimension text for one or several dimensions. Dimensions that have the dimension text parallel to the dimension line will have the text rotated ortogonally toward the dimension line and vice versa.
Access:	Digitizer menu: DIMENSIONING, TROTATE Screen menu: MDIM, TROTATE
Procedure:	Mark all dimensions that should have their dimension text rotated.

2.9.20.8 TEDIT

Function:	Changes the position of the dimension text and the insertion angle of a dimension.
Access:	Digitizer menu: DIMENSIONING, TEDIT Screen menu: MDIM, TEDIT
Procedure:	Mark the dimension to be edited. If the dimension text should be moved, point out a new middle point for the text or choose one of the following alternatives from the screen menu: Left The dimension text is left-justified. Right The dimension text is right-justified. Home Restores the dimension text to the position specified through the DIM variable setting. Angle Rotates the dimension text in an arbitrary angle relative to the dimension line.

2.9.20.9 DIMSTYLES

Function:	Commands for control dimensioning variables and DIMSTYLEs.
Access:	Digitizer menu: DIMENSIONING, DIMSTYLES Screen menu: MDIM, DIMSTYLES
Procedure:	A screen menu with the following alternatives is shown: **SAVE** Saves a DIMSTYLE. **RESTORE** Restores a DIMSTYLE. **VARIABLE** Lists the values of all AutoCAD's dimensioning variables. **OVERRIDE** Temporarily changes dimensioning variable for a dimension and/or a DIMSTYLE. **RESET** Resets the default values for all dimensioning variables and sets or installs the DIMSTYLE "MEKISO". Note that this function saves the default value in DIMSTYLE MEKISO. If you want to permanently change the DIMSTYLE, you can create your own. For further information about this procedure, see the AutoCAD manual.

2.10 PROPERTIES

Each entity created in AutoCAD, independent of type, has properties. The properties handled by the functions below are: Layer, line type, and color.

Entities in AUTOCAD always belong to a layer. Normally these entities have the same properties as the layer to which they belong. If you move an entity to another layer, the entity changes its line type and color to match that of the new layer.

You can specify the way entities should behave by giving them the line type "BYLAYER", which changes according to its environment. If you want an entity to belong to a specific layer but have its own unique line type, you can specify the line type for the entity.

The entity can then have a constant line type regardless of which layer it belongs to.

The same applies to colors.

2.10.1 LGROUP

Function:	Moves a number of chosen entities to another layer. The entities that are moved may belong to different layer groups.
Access:	Digitizer menu: PROPERTY, LGROUP Screen menu: PROPERTY, LGROUP
Procedure:	Select the entities that should be moved to another layer group. Select the layer to receive the entities. The alternative "Select from entity" gives the possibility of choosing an entity to take the layer group from.

2.10.2 LAYER

Function:	Moves a number of chosen entities to another layer. The entities that are moved may belong to different layers.

Access: Digitizer menu: PROPERTY, LAYER
Screen menu: PROPERTY, LAYER

Procedure: Select the entities to be moved to another layer.
Select the layer to receive the entities. The alternative “Select from entity” gives the possibility of choosing an entity to take the layer from.

2.10.3 LINETYPE

Function: Changes line type for a number of chosen entities. You can specify the name of the line type to change to, or choose the alternatives “Near” or “Thin”. These alternatives work well with the standard AutoCAD line types.

Access: Digitizer menu: PROPERTY, LINETYPE
Screen menu: PROPERTY, LINETYPE

Procedure: Select the entities that should receive a new line type.
Select new line type. The alternatives “Near” and “Thin” choose a new line type if one exists.

2.10.4 COLOR

Function: Changes color of a number of chosen entities.

Access: Digitizer menu: PROPERTY, COLOR
Screen menu: PROPERTY, COLOR

Procedure: Select the entities that are to be given a new color.
Select new color.
Note: The color of the dimensions is controlled by special variables. For further information see the AutoCAD manual.

2.11 LGROUP

Functions that change the status of a layer group. The layer group can be turned on, turned off, thawed, frozen, locked, or unlocked. You can also change to another active layer group or create new layer groups.

2.11.1 SELECT

Function: Switches from one active layer group to another. If you have configured the system for automatic layer locking, the layer group you switch to becomes unlocked and the layer you leave becomes locked.

Access: Digitizer menu: LGROUP, Select
Screen menu: LGROUP, Select

Procedure: Select the layer group that will become the new active layer group.
Note: You can either choose a layer name from the list of layers that belong to the active layer group, or point to an object belonging to the desired layer group.

2.11.2 ?

Function: Gives a list of the layers, including properties, that exist in the selected layer group.

Access: Digitizer menu: LGROUP, LGROUP, ?
Screen menu: LGROUP, ?

Procedure: Select layer group to be displayed.

2.11.3 LIST

Function: Gives a list of the layer groups, including a description of each, contained in the drawing.

Access: Digitizer menu: LGROUP, LGROUP, LIST
Screen menu: LGROUP, LIST

2.11.4 CREATE

Function: Creates a new layer group with an accompanying description line.

Access: Digitizer menu: LGROUP, LGROUP, CREATE
Screen menu: LGROUP, CREATE

Procedure: Select name for new layer.
Give a description of the layer group (one line).

2.11.5 NEW DESCRIPTION

Function: Changes the description line for an existing layer group.

Access: Digitizer menu: LGROUP, LGROUP, NEW DESC.
Screen menu: LGROUP, NEW DESC.

Procedure: Select the layer group for which the description should be changed.
Enter the new description line.

2.11.6 HIGHLIGHT

Function: Highlights objects on a selected layer group.

Access: Digitizer menu: LGROUP, LGROUP, Highlight
Screen menu: LGROUP, Highlight

Procedure: Select layer group to be highlighted.

2.11.7 ON, OFF, THAW, FREEZE, LOCK, UNLOCK

Function: These functions influence the status of the layer that belongs to the selected layer group.

Access: Digitizer menu: LGROUP, (ON, OFF, THAW, FREEZE, LOCK, UNLOCK)
Screen menu: LGROUP, (ON, OFF, THAW, FREEZE, LOCK, UNLOCK)

Procedure: Activate each function.
Select the layer group for which the status should be changed.

2.12 LEVEL

2.12.1 ?

Function: Gives a list of existing layers, including properties, for a selected level.

Access: Digitizer menu: LGROUP, LGROUP, LEVEL, ?
Screen menu: LGROUP, LEVEL, ?

Procedure: Select layer level to be displayed.

2.12.2 LIST

Function: Gives a list of existing layer levels in the drawing.

Access: Digitizer menu: LGROUP, LGROUP, LEVEL, LIST.
Screen menu: LGROUP, LEVEL, LIST.

2.12.3 HIGHLIGHT

Function: Highlights objects on a selected layer level.

Access: Digitizer menu: LGROUP, LGROUP, LEVEL, Highlight
Screen menu: LGROUP, LEVEL, Highlight

Procedure: Select layer level to be highlighted.

2.12.4 ON, OFF, THAW, FREEZE, LOCK, UNLOCK

Function: These functions influence the status of layers belonging to the layer level to be selected.

Access: Digitizer menu: LGROUP, LGROUP, LEVEL, (ON, OFF, THAW, FREEZE, LOCK, UNLOCK)
Screen menu: LGROUP, LEVEL, (ON, OFF, THAW, FREEZE, LOCK, UNLOCK)

Procedure: Activate each function.
Select the layer level for which the status should be changed.

2.13 LAYER

Functions that change the status of one or several layers. The layers can be turned on, turned off, thawed, frozen, locked, or unlocked. You can also change to another active layer.

2.13.1 SELECT

Function:	Switches from one active layer to another.
Access:	Digitizer menu: LAYER, Select Screen menu: LAYER, Select
Procedure:	Select layer name of the layer that is to become the new active layer. Note: You can either choose a layer name from a list of the layers that belong to the active layer group, write in a name, or specify the layer name by pointing at an object placed on the desired layer.

2.13.2 ?

Function:	Gives a description of the status for the chosen layer.
Access:	Screen menu: LAYER, ?.
Procedure:	Select the layer to be displayed.

2.13.3 HIGHLIGHT

Function:	Highlights objects on a selected layer.
Access:	Digitizer menu: LAYER, LAYER, Highlight Screen menu: LAYER, Highlight
Procedure:	Select layer to be highlighted.

2.13.4 ERASE

Function:	Erases objects on a selected layer.
Access:	Digitizer menu: LAYER, LAYER, Erase Screen menu: LAYER, Erase
Procedure:	Select layer on which objects are to be erased.

2.13.5 ON, OFF, THAW, FREEZE, LOCK, UNLOCK

Function: These functions influence the status of the selected layer.

Access: Digitizer menu: LAYER, (On, Off, Thaw, Freeze),
Screen menu: LAYER, (ON, OFF, THAW, FREEZE, LOCK, UNLOCK)

Procedure: Activate each function.
Select the layer for which the status should be changed.

2.13.6 Digitizer menu “Layer”

On the menu plate there are a number of AutoCAD commands for managing often used layers.

2.13.6.1 ON, OFF, FREEZE, THAW

Function: Changes the status of a selected layer. The layer can either be selected directly or chosen from the plate. The alternatives “Select” and “the whole group” on the plate can be used.

Access: Digitizer menu: LAYER, (ON, OFF, FREEZE, THAW).

Procedure: Select the layers for which the status should be changed. The desired layer can be chosen by selecting it from the digitizer menu.

2.13.6.2 WHOLE GROUP

Function: Chooses all layers in the active layer group. Used as an answer to the system prompt for layer names. Used together with the commands On, Off, Freeze, Thaw on the digitizer menu or with AutoCAD’s Layer command.

Access: Digitizer menu: LAYER, Whole Group

2.13.6.3 ALL ON, ALL OFF

Function: Switches all layers in the drawing on or off.

Access: Digitizer menu: LAYER, All On or All Off.

2.14 DRAWBOX

Functions that draw rectangles, rhombs, and triangles.

2.14.1 RECTANGLE CORNER

Function: Draws a rectangle according to the specified diagonal corner points.

Access: Digitizer menu: DRAWBOX, Box 1.
Screen menu: DRAWBOX, RECTANG.

Procedure: Enter the first corner.
Enter the second corner.
Enter the angle.

2.14.2 CENTERBOX

Function: Draws a rectangle according to the specified center point and corner. The function marks a quadrant of a rectangle, which in turn enables the entire rectangle to be drawn.

Access: Digitizer menu: DRAWBOX, Box 2.
Screen menu: DRAWBOX, CENBOX.

Procedure: Enter the center point of the rectangle.
Enter one corner of the rectangle.
Enter the angle.

2.14.3 RECTANGLE MIDDLEPOINT

Function: Draws a rectangle according to the specified middle point of one side of the rectangle together with the width and height.

Access: Digitizer menu: DRAWBOX, Box 3.
Screen menu: DRAWBOX, MIDRECT.

Procedure: Enter insertion point.
Enter the rectangle’s width.
Enter the rectangle’s height.
Enter the angle.

2.14.4 RHOMB

Function: Draws a rhomb according to the specified diagonal and one side.

Access: Digitizer menu: DRAWBOX, Box 4.
Screen menu: DRAWBOX, RHOMB.

Procedure: Enter the insertion point.
Point at the diagonal.
Enter one side.
Enter the angle.

2.14.5 TRIANGLE CORNERPOINTS

Function: Draws an isosceles triangle according to two specified corner points in a rectangle.

Access: Digitizer menu: DRAWBOX, Box 5.
Screen menu: DRAWBOX, TRIANG.

Procedure: Enter insertion point.
Enter the second corner point of the rectangle that is to register the triangle.
Enter the angle.

2.14.6 ISOSCELES TRIANGLE

Function: Draws a triangle according to the specified base and height of the triangle. The height must be specified in accordance with the insertion point.

Access: Digitizer menu: DRAWBOX, Box 6.
Screen menu: DRAWBOX, ISOSCELES.

Procedure: Enter insertion point.
Enter the base.
Enter the height.
Enter the angle.

2.14.7 RIGHT ANGLE TRIANGLE

Function: Draws a right angle triangle according to the specified base and height of the triangle. The height is specified in accordance with the insertion point.

Access: Digitizer menu: DRAWBOX, Box 7.
Screen menu: DRAWBOX, RIGHTANGLE.

Procedure: Enter insertion point.
Enter the base.
Enter the height.
Enter the angle.

2.14.8 MIDDLE POINT LINE

Function: Draws a line in which the middle point and length are specified.

Access: Digitizer menu: DRAWBOX, Box 8.
Screen menu: DRAWBOX, MIDLINE.

Procedure: Enter insertion point.
Enter the line’s length.
Enter the angle.

2.15 REFPOINT

Functions for saving a reference point and for using a saved reference point.

2.15.1 SAVE

Function: Saves the coordinates for a specified point.

Access: Digitizer menu: REFPOINT, SAVE
Screen menu: REFPOINT, SAVE

Procedure: Select point.

2.15.2 USE

Function: Refers to a saved point according to another function’s request.

Access: Digitizer menu: REFPOINT, USE
Screen menu: REFPOINT, USE

2.16 ORIGIN

Functions to move and restore the origin, that is, move UCS-origin.

2.16.1 MOVE

Function: Moves the origin (UCS).

Access: Digitizer menu: ORIGIN, MOVE
Screen menu: ORIGIN, MOVE

Procedure: Select new origin.
Select angle.

2.16.2 RESTORE

Function: Restores the origin (restores UCS to WORLD).

Access: Digitizer menu: ORIGIN, RESTORE
Screen menu: ORIGIN, REST.

2.17 SYMLIB

Functions to work with symbol libraries (directories) in which symbols are stored as blocks and then chosen with the block name or icon (slide). There can be any number of libraries, each of which can contain any number of symbols.

You can either insert a symbol as it is drawn, or scan an existing library and afterwards create icons (slides) for these symbols.

Scale factor, insertion angle, and so on are the same for all symbols in a library. These values can be changed and will then influence all insertions of symbols from this library.

Each “symbol library” corresponds to a directory and each “symbol” corresponds to an AutoCAD block.

2.17.1 SYMLIB

Function:	Displays the screen menu’s complete collection of commands used for handling symbol libraries and their symbols.
Access:	Digitizer menu: SYMLIB, SYMLIB Screen menu: SYMLIB

2.17.2 INSERT

Function:	Inserts a block from a chosen symbol library. The block is inserted in different ways depending on the library settings.
Access:	Digitizer menu: SYMLIB, Insert Screen menu: SYMLIB, Insert.
Procedure:	Select symbol library. Select block by marking the name in the list or by pointing at the icon. Insert the block according to the command sequence as specified in the library settings.

2.17.3 LAST LIBRARY

Function:	Inserts a block from the last selected symbol library. If no symbol library has been selected, the function prompts for a library. The block is inserted in different ways depending on the library settings.
Access:	Digitizer menu: SYMLIB, Last library Screen menu: SYMLIB, Last.lib.
Procedure:	Select block by marking the name in the list or by pointing at the icon. Insert the block according to the command sequence as specified in the library settings.

2.17.4 CREATE BLOCK

Function: Places a block in one of the symbol libraries.

The block name should be a valid file name and must not contain more than eight (8) characters. You can select pre-chosen names if you have chosen a prefix in the directories properties. You will then receive a proposed name with a prefix followed by a sequential number.

In connection with the creation of a block (with AutoCAD's command Wblock) an icon (slide) of the block is created that is used when selecting the block for insertion.

There are three property settings to choose from for the icon and objects that should be included in the block: "Zoom", "Zoom?" and "?".

"Zoom" means that you select a window that AutoCAD will zoom in and create an icon of. All objects within the selected window are included in the block (the selection of blocks is done automatically).

"Zoom?" means that you select a window that AutoCAD will zoom in and create an icon of. You select the objects that should be included in the block.

"?" means that you create an icon of what should be visible on the screen. You select which objects should be included in the block.

Access: Digitizer menu: SYMLIB, Make block

Screen menu: SYMLIB, Make.

Procedure: Select the library where the block is to be placed.

Select block name.

Select how the block and icon should be made ("Zoom", "Zoom?" or "?").

If applicable, select a window for the icon (alternatively "Zoom" and "Zoom?").

Select insertion point.

If applicable, select which objects should be included in the block (alternatively "Zoom" and "Zoom?").

Note: This function presumes that you create an icon (slide) for each block.

2.17.5 ERASE BLOCK

Function: Removes a block from a symbol library and erases the file. If there is an icon (slide) that belongs to the block this will be removed as well.

Access: Digitizer menu: SYMLIB, Erase block

Screen menu: SYMLIB, Erase.

Procedure: Select the library which contains the block.

Select the block to be removed.

2.17.6 MAKE SLD

Function:	Makes an icon (slide) for a block. This icon is later used when choosing a block for insertion.
Access:	Screen menu: SYMLIB, MAKE SLD.
Procedure:	Procedure: Select the library which contains the block. Select the block that should receive a new icon. Select size of the icon to be made by zooming in.

2.17.7 CROSS HEIGHT

Function:	Sets the size of the cross that marks the insertion point when block icons (slides) are created. The size 0.0 means that a cross will not be drawn out.
Access:	Screen menu: SYMLIB, Crossht.
Procedure:	Select the height the cross should have in relation to the icon (slide).

2.17.8 EDIT LIBRARY

Function:	Manages symbol libraries in which the blocks are placed. New libraries can be created and existing libraries can be removed. There is also a function to unlock libraries that have been inadvertently locked by a user. It is also possible to change the libraries' insertion properties (scale factor, angle, and so on), block names prefix, and description line.
Access:	Digitizer menu: SYMLIB, Edit library Screen menu: SYMLIB, Edit.lib.
Procedure:	Mark the library for which the data should be changed. Change data in the space provided. Save settings by pressing “Save data”. Quit with OK. **Remark:** Symbol libraries can also be created via configuration script files. See the *AdvaBuild Diagram Builder User's Guide* Chapter 3: “Configuration and Application Building.”

Explanation of the dialog box buttons:

“New...”

Creates a new symbol library. The name can consist of up to eight characters.

“Remove”

Removes the symbol library marked in the list. The library must not contain any blocks or icons. These can either be removed one by one with the Erase Block function or with the operating system's commands.

“Unlock...”

Unlocks a symbol library that has been inadvertently locked by a user. Can only be performed if the library is locked. Note that this should only be used in an emergency and when no other users are working with the symbol library.

“Save data”

Saves the changes to the settings that have been made for the symbol library marked in the list.

2.17.9 UPDATE

Function:	Updates a library in which blocks (“.dwg”-files) have been copied to an existing library and should be available for the insertion function.
Access:	Screen menu: SYMLIB, Update.
Procedure:	Select the library that should be updated. Note: The function adds the new blocks to the library’s block list. The new blocks can now be chosen or selected with the insertion functions.

2.17.10 MAKE SLDS

Function:	Creates icons (slides) for blocks in a library. You can choose between making new icons for all blocks in the library or only for the blocks that do not presently have icons. This function is useful when you have copied existing blocks to a symbol library and registered them with the function “UPDATE”.
Access:	Screen menu: SYMLIB, MK SLDs.
Procedure:	Select the library for which the new icons should be created. Select whether all blocks or only the blocks that are missing icons should receive new icons. Note: The function erases all objects in the drawing, including configurations, and creates new slides for the blocks. Do this on a drawing without valuable data.

2.18 Global changes

Using this function, it is simple to make changes that are common for a number of drawings. The different kinds of changes that the function supports are the following:

- Changing values of attributes in blocks.
  Examples: Changing text in the title block of the drawing frame, or changing item designations in a circuit diagram.
- Changing text strings. For example, this can be used if one wants to translate simple describing texts.
- Changing the title block and transfer attribute texts, which is very helpful when a customer wants their own title block on the drawings.
- Exchanging blocks and transfer attribute texts.
- Free function, defined in LISP.

2.18.1 Selecting drawings

Function:

Selection of the drawings you want to operate on and what to change in them is done in two consecutive steps. Step one is to place all the chosen drawings into one library (this is not necessary when you work with a “project library” that contains the drawings already). In step two AutoCAD is started with one of the drawings selected. In AutoCAD you then activate this function, which displays a dialog box. Here you choose the drawings to operate on from a list that is automatically displayed and you also define the actions to be performed. If you end this session with OK, a process is started that performs the changes in the selected drawings.

Note: If in any drawing there is a reference to a menu file, font file, or similar file that AutoCAD is unable to find, the function cannot continue from there. Therefore it is important to make sure that this will not occur.

2.18.2 Change attributes

Function:

In order to be able to change attribute values, you have to know the block name, TAG, FROM and TO values (similar to the AutoCAD command ATTEDIT). Since it may be difficult to know which TAG exists in a block and the block name, the function “Add from block” has been created. This function reads all attribute definitions from an existing block (TAG, PROMPT and VALUE) and the block name. From a list you can select one or more of these attribute definitions.

Note: Only the attributes TAG and VALUE will later be used. The PROMPT is only an aid to choose the right attribute. You can also choose whether to use the block name or to use the selected attribute definitions with all blocks. In the latter case the block name is shown as a “*”.

The function “Change” is used to change a marked line in the list, for example when one wants to alter the TO value.

“Add” adds a new line to the end of the list.

“Erase” erases a marked line.

2.18.3 Change texts

Function:

In order to be able to change texts, you have to know the FROM and TO values. The function “Add from block” reads from an existing text.

The function “Change” is used to change a marked line in the list, for example when one wants to alter the TO value.

“Add” adds a new line to the end of the list.

“Erase” erases a marked line.

2.18.4 Change frame

Function:	Replaces one drawing frame with another. The block to be inserted has to be in AutoCAD's search path. If this is not true, then the whole search path has to be specified. In order not to lose all information in the old drawing frame, this is automatically transferred to the new block. If there are differences between the old and new drawing frames, or if you want to transfer a VALUE from one attribute to another, you can define how this is to be performed in the transfer file. This file is a common text file with two columns. In the left column the TAG of the old block is defined and in the right column the corresponding TAG of the new block should be stated. The extension of the file has to be ".TBL". If no transfer file exists, the function will assume that all TAGs are identical between the old and the new blocks. The function will also update information about the configuration.

2.18.5 Change block

Function:	Replaces an existing block with another block. Information in attributes can be transferred in the same manner as in the function "Change frame", that is, with or without the transfer file.

2.18.6 User function

Function:	The user is enabled to create a function written in AutoLISP. The Lisp file should be written so that the function is performed when the file has been loaded (similar to the AutoLISP function "LOAD").
Access:	Pulldown menu: File, Global changes
Procedure:	Start AutoCAD with one of the drawings in the library. Start the function. Select from the list the drawings to be changed. Choose action to be performed by marking the checkboxes. Define how the change should be performed, that is, FROM/TO values for attributes, texts, and drawing frame, and User defined function when such is used. Press OK to start processing the drawings.

2.18.7 Example-files

The "MSC" directory in the program code tree contains some example files that can be used together with global changes.

FUNK.LSP is a simple example of a possible Lisp file "user function".

2.19 Maintenance and Settings

This section describes how to customize the program to suit different needs.

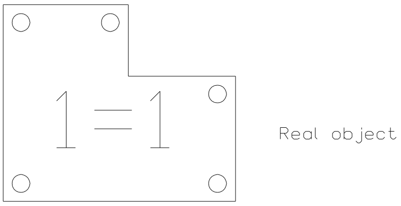
2.19.1 SCALE FACTOR

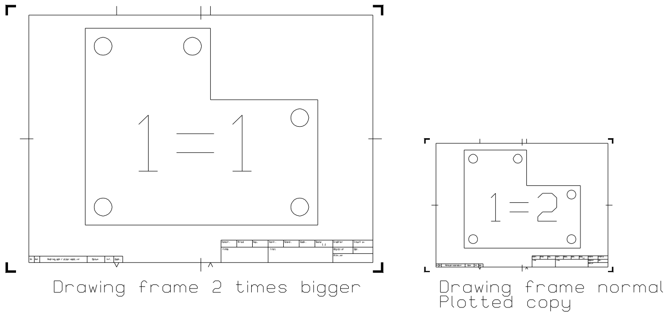
All parts of a drawing that have an equivalent in reality should be drawn on a scale of 1:1.

To fit large objects within a given format, scale up the drawing frame a number of times until everything fits. Later, when the drawing is plotted, shrink the drawing (both objects and drawing frame) to the normal size.

This technique has many advantages. If you draw all objects in 1:1 they can be moved from drawing to drawing without any trouble. For those parts that should have a certain size on the final paper copy of the drawing, texts, dimensioning, and so on must be adjusted to the chosen scale factor.

When you select scale factor in the application, you set how much all parts that are to have a certain size on the paper should be scaled up. It is difficult to change the scale factor after the drawing is completed. It is relatively easy to rescale the drawing frame, but many of the other parts that are dependent on both the paper and the objects (for example dimensioning) are difficult to scale properly.





In this example, scale factor 1:2 has been chosen.

2.19.2 PROTOTYPE DRAWING

A prototype drawing is a drawing used as a pattern when you create a new drawing (see the AutoCAD manual for a description of how AutoCAD handles prototype drawings).

For the Diagram Builder integrated in AdvaBuild, the prototype drawings are delivered with the installation (see the *AdvaBuild Diagram Builder User’s Guide* Chapter 3). These should not be modified!

2.19.3 CONFIGURATION

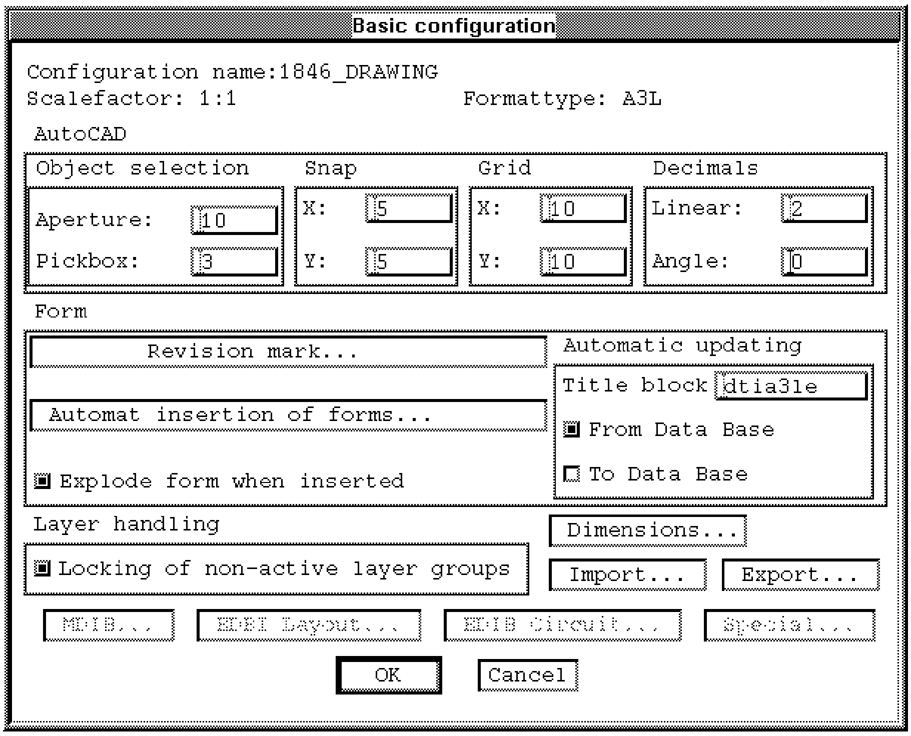
You can make certain settings to influence the program’s manner of working. These settings are stored in each drawing. The settings can be changed with the configuration function in the program.

2.19.3.1 Storing the drawing’s configuration information

The configuration information is stored in a point in the drawing origin on the layer “MASTERLINE_CFG”. If the configuration point is removed from the drawing, the settings that have been made disappear.

The layer “MASTERLINE_CFG” is normally locked and frozen when you work on a drawing so that you cannot mistakenly remove or change the configuration. The program unlocks the layer when the configuration is changed and then automatically locks the layer again.

2.19.3.2 Configuration in the Diagram Builder base



Basic configuration

Configuration name:1846_DRAWING
Scalefactor: 1:1
Formattype: A3L

AutoCAD

Object selection
Aperture: 10
Pickbox: 3

Snap
X: 5
Y: 5

Grid
X: 10
Y: 10

Decimals
Linear: 2
Angle: 0

Form
☒ Explode form when inserted

Automatic updating
Title block: dtia3le
☒ From Data Base
☐ To Data Base

Layer handling
☒ Locking of non-active layer groups

In the uppermost part of the dialog box, certain data about the drawing is given. This cannot be changed in the dialog box.

Configuration Name

The name of the drawing when the application was started. Used to determine which configuration is the real one if the drawing gets many configurations by mistake.

Scale factor

The drawing’s current scale factor.

Format type

The format type from the inserted drawing form. The format type that is registered by the PLOT function among others.

2.19.4 Settings that can be changed through the dialog box:

Aperture, Pickbox, Snap, Grid

See the AutoCAD manual.

Decimals

Linear equivalent of the AutoCAD variable “LUPREC”. Angles equivalent of the AutoCAD variable “AUPREC”. LUPREC and AUPREC are described in the AutoCAD manual.

Title block

Note: Is preset within DIB integrated in AdvaBuild and must not be changed!

Name for the block that was installed when the drawing was created. Used for automatic search of the drawing head.

From Database

Marks whether the program should, when starting, automatically update the title block with data from the database.

This is normally switched on, but may be switched off for an individual diagram by the user.

To Database

Marks whether the program should automatically update the database with data from the title block when you finish editing the drawing.

Note: This function is for future use and must be switched off, because actually no data from the title block will be updated.

Explode form when inserting

Marks whether the form should be exploded when inserting a form in those cases where it has been stored as a block with the same name (in the same directory) as the form definition.

Note: This must be switched on within AdvaBuild integration.

Revision marking...

Opens a dialog box with the following settings:

Block marking

Name for the block used when inserting revision mark.

Radius

The radius a block should have insertion of for revision marks.

List block (line)

Name for the block used for the insertion of a revision list line.

Note: This is set automatically within AdvaBuild according to the naming of the used title block and must not be changed.

“Automatic insertion of form...”

Note: These functions are not used within AdvaBuild integration.

Opens a dialog box for adjusting the program’s start up settings.

Automatic insertion of form

Marks whether a form should be automatically inserted during start up. This marking is automatically removed when the form has been inserted.

Form setting

The name of the form settings from which the format should be chosen during automatic drawing.

Form name

The form name of the settings that should be automatically inserted. If the setting and the form name are marked, and “Automatic insertion of form” is marked, the program will automatically draw up an equivalent form when the program is started. The setting of this is preferably done in the prototype drawing.

Locking of non-active layer groups

Marks whether the layers that do not belong to the active layer group should be automatically locked. Non-active layers are locked or unlocked automatically if this setting is changed.

“Dimensioning...”

Opens a dialog box for setting the work method during dimensioning.

Text parallel with the dimension line

Marks whether the text should be parallel or perpendicular to the dimension line when creating a superimposed running dimensioning.

“Import...”

Note: This function must not be used within AdvaBuild integration.

Registers a configuration printed out with “Export” function and updates the configuration of the drawing with this information.

“Export...”

Note: This function must not be used within AdvaBuild integration.

Prints some of the configuration information available in the drawing to a file with the extension “.cfg”. This file can then be registered with the import function.

“MDIB...”

This function is for future use.

“EDIB Layout...”, “EDIB Circuit.”

Opens a dialog box for the setting of the Electrical Diagram Builder’s method of operation. This function can only be reached when the respective Electrical Diagram Builder modules are in use.

“Special...”

Opens a dialog box for the setting of the method of operation for a custom application. This function can only be reached when a custom application is in use.

“OK”

Quits the dialog box and saves the settings.

“Cancel”

Quits the dialog box without saving the settings.

2.19.5 FORMAT

You can create descriptions of how the drawing forms should be drawn that will be used later when you insert a form. The method for changing the scale factor is also described here.

The functions handling the drawing forms are written to operate in a network environment in which several users share the same settings. The directories are locked when they are being used so that a user should not be able to modify the contents while another user is working with the directory.

2.19.5.1 Important Concepts

Format type

Type of format. Examples of common format types: A3L (A3 Landscape) and A4P (A4 Portrait). This format type is registered by the plot function.

Form

Name of a form definition. A form definition consists of information about format types and a description of how the form should be drawn up (drawing head, revision head, bookmark, and so on). The form name needn’t be the same as the format type.

Note: The form definition is saved in a file with the extension “.frm” in the form setting’s directory.

Form setting

Several forms gathered in a group. Each group is equivalent to a directory in an MLUSER tree.

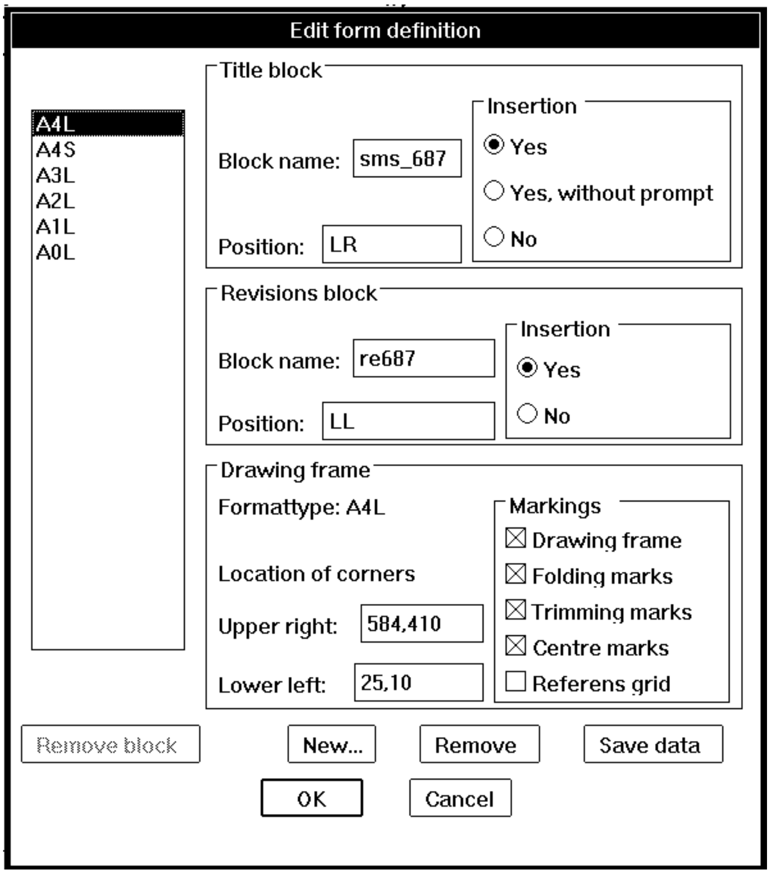
Title block

This part of a form is often placed in the bottom right corner of the drawing frame. It contains administrative information about the drawing.

Revision head

This part of a form is often placed in the bottom left corner of the drawing frame (it can also be placed in other positions).

2.19.6 Create form definition



Title block

Block name: sms_687

Position: LR

Insertion

● Yes

○ Yes, without prompt

○ No

Revisions block

Block name: re687

Position: LL

Insertion

● Yes

○ No

Drawing frame

Formattype: A4L

Location of corners

Upper right: 584,410

Lower left: 25,10

Markings

☒ Drawing frame

☒ Folding marks

☒ Trimming marks

☒ Centre marks

☐ Referens grid

Note: *All items of the dialog box are preset within the Diagram Builder integrated in AdvaBuild and must not be changed!*

Title block

Block name:	Block name for title block.
Position:	The insertion point for the drawing head. These can either be selected with a point (for example: 100,200) or with a code. The following codes can be used: LL - The drawing frame’s lower left corner. LR - The drawing frame’s lower right corner. UL - The drawing frame’s upper left corner. UR - The drawing frame’s upper right corner.
Insertion:	Select whether the drawing head should be inserted and if the system should prompt for attribute values.

Revision Head

Block name:	Block name for revision head.
Position:	These can either be selected with a point (for example: 100,200) or with a code. The following codes can be used: LL - The drawing frame’s lower left corner. LR - The drawing frame’s lower right corner. UL - The drawing frame’s upper left corner. UR - The drawing frame’s upper right corner.
Insertion:	Select whether the revision head should be inserted.

Drawing frame

Format type:	Shows what format type belongs to the form.
Placing of a corner:	Select where the drawing frame’s corner should be placed.
Markings:	Select what parts should be drawn when the form is inserted.

2.19.7 User defined title block

In many cases you will want to make a private title block with your personal logotype. You can also choose to make your own revision heads.

Procedure:	Start from an existing title block (insert and explode the block). Edit the title block to your tastes. Keep in mind that the values of the attributes must have the correct TAGs for automatic updating to and from the title block to operate correctly. Save the new title block or the revision head with the function “Save title”. The title block or the revision head is now saved in the chosen form setting.

2.19.7.1 Form as a block

Note: This is the concept used within the Diagram Builder integrated in AdvaBuild.

If the settings available to a form definition are inadequate for creating the desired form, you can create a block of the form instead. You then have the freedom of making the form any way you like.

Procedure:	Make a form definition in the normal manner. Give the settings for how the form should be drawn.
	Draw the form with the function for form insertion.
	Modify the form as desired.
	Save the form with the function “As block”.

2.19.7.2 Form insertion

The following occurs when inserting a form:

- You choose which setup (directory) the form should be selected from (only if there are many form setups available).
- You choose which form should be inserted. If there is a block (“.dwg” file) with the same name in the same directory as the “.frm” file, this block should be inserted. Otherwise a form is drawn up according to the description in the “.frm” file.
- If the form is not to be inserted as a block, the function searches for a potential title block and revision head in the directory for the chosen setting. If they are not there, the function searches for these blocks in the blocks normally searched by AutoCAD during the insertion of a block.
- The title block’s block name (according to the “.frm” file) is saved in the drawing’s configuration so that you should be able to update the title block automatically with information from the drawing archive.

Note: If the form should be inserted as a block you can choose whether the block should be exploded during insertion or not. This insertion is done in the drawing’s configuration.

2.19.8 PLOTTING

AutoCAD has the possibility of configuring many different plotters which you can switch between. The functions below make it possible to adjust the print-outs for the respective plotter and format type. This is a support to simplify the usage of AutoCAD’s plot function.

The functions handling the drawing forms are written to operate in a network environment in which several users share the same settings. The directories are locked when they are being used so that a user should not be able to modify the contents while another user is working with the directory.

2.19.8.1 Important Concepts

Format type

Type of format. Examples of common format types: A3L (A3 Landscape) and A4P (A4 Portrait).

The plotter's description

AutoCAD can be configured so that you can choose between several different print media under the same drawing session (see the AutoCAD manual). To divide the different plotted configurations, give each plotter configuration a description. This description is used by the application's plot function to set the correct plotter configuration.

Plotter settings (PCP file)

AutoCAD can store plotter settings in a file with the extension ".pcp" (see the AutoCAD manual). These settings can then be registered before you do the plotting. If you want to plot to a file, the file name should be selected in the .PCP file.

Directory for plotter settings

A directory in an MLUSER tree consisting of one or more PCP files and a file with the description of the plotter configuration (plotter configuration name) and a description of the contents of the directory.

Scale factor

If you want to plot in SCALE, the drawing is set to the scale factor it has been configured for. If you plot with FIT, the drawing becomes as large as possible according to the plotter being used and accordingly is NOT properly scaled.

Connection between format type, the PCP file, and the scale factor

In each directory containing plotter settings, a number of PCP files are stored that contain settings describing the procedure of the plotting.

If you decide to plot in SCALE there must be a PCP file in the directory for plotter settings with the same name as the format type. Otherwise the function is aborted. If you decide to plot with scale factor FIT the function takes the PCP file that has the same name as the format type. If this is missing, you must choose a new PCP file among the PCP files existing in the directory.

Connection between the description of the plotter and the directory for the plotter settings.

In each directory for plotter settings, a plotter description is saved. When you choose to use settings from a specific directory, the function instructs AutoCAD to work with the plotter configurations that have a description stored in the directory for plotter settings. Note that this implies that the AutoCAD installation has been made correctly.

Important files plotter settings directories

LIBDATA.TXT

Contains the plotter’s description as well as a description line for the directory.

2.19.8.2 Examples

Make the following settings:

- Configure AutoCAD for the plotter to be used. Enter the plotter description.
- Create a directory for plotter settings. Save the plotter configuration’s description in the directory’s setting.
- Use AutoCAD’s Plot command to save a PCP file in the directory for plotter settings. The PCP file should have the same name as the format type (for example, “a3l.pcp” for the format type “A3L”).

Note: The setting of scale factor and the setting on HIDE in the PCP files is overridden with the current values when plotting.

During plotting:

- Register a format type in the configuration by inserting a form. Format type can also be registered without the application’s function for insertion of forms if used.
- Decide whether or not the plotting should include hidden lines (HIDE).
- Select scale factor (SCALE or FIT) and which part of drawing to plot (LIMITS, EXTENTS, and so on).
- Select which directory with plotter settings should be used.

The following occurs:

- The function instructs AutoCAD to work with the plotter with the description registered in the directory with plotter settings.
- The function searches for the PCP file in the directory with plotter settings that have the same name as the format type. If such a file is missing and you have chosen to plot with the scale factor FIT, you will instead need to choose among the existing PCP files in the directory. If the PCP file is missing and you have decided to plot with scale factor SCALE, the function is aborted.
- If the correct PCP file exists or you have decided to use another PCP file, its settings are registered. Note that the settings of scale factor and “HIDE” in the PCP file are changed to the current values. The settings of these values that are in the PCP files will thereby be changed.
- The plotting is started with the settings that have been made.

2.19.9 LAYER SYSTEM

The program is working with a layer system with layer groups. There is a base group with a number of layers. You can then create new layer groups with the basic group as the base. A layer group is created by adding a group name to the layer names in the base group. By doing this a new group with layers is created.

The layer system is described in a file named “layers.cfg”. This file is registered when you create a new drawing and the program creates a layer system according to the specification in this file.

The layer system is very flexible and can be adjusted according to your particular needs. We strongly recommend that you follow the layer structure delivered as standard for respective applications. It is a great advantage to have drawings with the same layer structure as the basic settings proposes.

2.19.9.1 The Base Group

The base group is the layer group used as a base in all other layer groups. It may consist of any number of layers. Use relatively short names in the base group.

For each layer in the base group the description is saved in the form of a text line. This description is printed out together with the layer name when you select a layer.

2.19.9.2 Layer groups

A layer group is created by taking the layers in the base group and adding a group prefix (any number of characters) before the layer names. By doing so, you create a group with new layers. All layer groups have the same number of layers as the base group.

To each layer group a description is saved in the form of a text line. This description is printed out together with the group name when you select layer groups.

2.19.9.3 Locking of non-active groups

You can automatically lock all layers in the layer groups that are not the active layer group if you want to protect the objects on the other layer groups. If you make another layer group active, the application automatically locks the layer in the old layer group and unlocks all layers in the new active layer group. In the configuration, you set whether you want automatic locking or not.

2.19.9.4 Configuration of the layer system

File “layers.cfg” contains a description of how the layer system is constructed. In the file there is a description of the layers in the base group (name, linetype, and color) and a description of the layer groups. “layers.cfg” also contains information about the active layer group.

This example file “layers.cfg” is for one layer group with two layers:

```
LAYERMODE
1
ACTIVE_GROUP
GROUP_0
A
GROUP
DESC_0
Group A
LAYER_1
01
LINETYPE_1
CONTINUOUS
COLOR_1
7
LAYERDESC_1
Description of layer 1
LAYER_2
02
LINETYPE_2
CONTINUOUS
COLOR_2
3
LAYERDESC_2
Description of layer 2
```

2.19.10 SYMBOL LIBRARY (SYMLIB)

The basic concept behind the symbol library is that you should be able to work with a directory and its accompanying blocks and icons (slides) in a simple and understandable manner. Also, as a single user there are advantages to being able to structure the storage of symbols (see the description of the directory structure).

There are functions to create and erase specific blocks. There are also functions for registering and creating icons (slides) for blocks drawn with other AutoCAD applications. You can, for example, register symbol directories from a supplier of details and then select among these in the same way as when you are working with your own blocks.

The functions that manage the symbol libraries are designed to operate in a network environment in which several users share the same data. The directories are locked while being used so that a directory cannot be modified by one user while another user is working with the directory.

2.19.10.1 The libraries

For each MLUSER tree, you can have several symbol libraries (directories). These are placed in a directory under the directory “blksld”.

You can have any number of symbol libraries in each MLUSER tree. The names must be valid directory names and may not contain more than eight characters.

To each library there are a number of attached properties settings (scale factor, settings angle, and so on). These properties are unique to each library and are common to all blocks in a particular library. The property settings in a library can be easily changed.

You can work with several MLUSER trees at the same time (see the description of the directory structure). During the selection of a library, the symbol libraries in the first MLUSER tree will be presented with their names, while the symbol libraries in the other MLUSER trees will be presented with a "*" before the name.

2.19.10.2 The blocks

A block is placed in a symbol library (or symbol directory). To each block you can then attach an icon (slide).

In each library you can place any number of blocks. Since a limited number of these blocks is displayed at the same time, it is recommended that you limit the number of blocks in the same library.

The block names must be valid file names and may not contain more than eight characters. You can get proposals for new block names by giving a block names prefix for the library. The program then proposes a new block name based on the prefix and a sequential number.

2.19.10.3 The icons

Each block can, if desired, be represented by an icon (slide). This icon is used as a support when you choose which block in a directory should be inserted. If you create a block with the existing function for this ("make block") an image is automatically created for this block. The image is stored in the same directory and has the same name as the block. You can create an image of a block afterwards (with the command "MAKESLD"). You can also automatically create images for all the blocks in a directory (the command "MAKESLDS").

The function creating the images (the slides) automatically inserts a cross at the insertion point of the block on the created images. You can control the size of this cross by selecting the height of the cross in relation to the whole image's height.

2.19.10.4 Network support

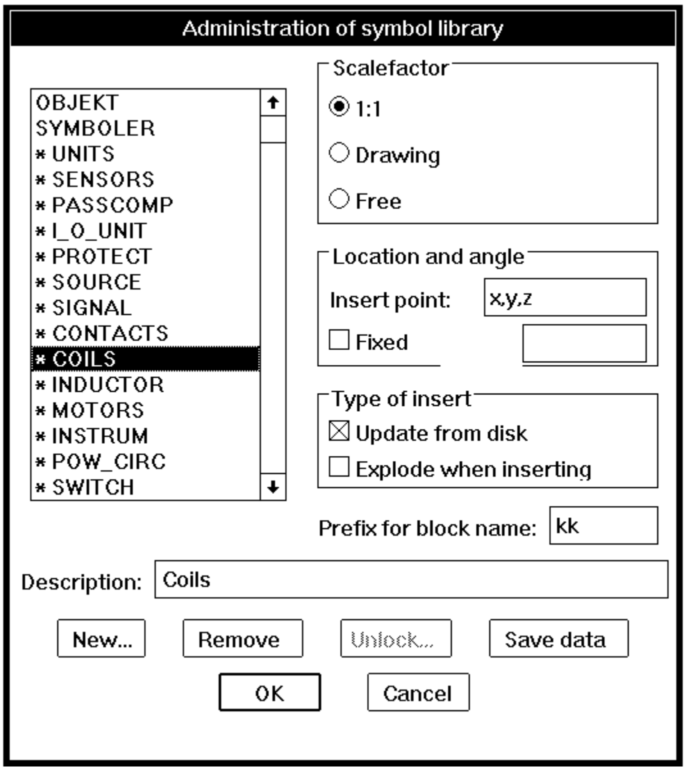
The symbol libraries are designed to be used by several users in a network. To prevent the destruction of one another's data, the library (directory) is locked for other users while a user is selecting a block, or while you are changing data in the library.

If there are many users this can lead to crashes in the directory. Divide the blocks in such a way that this can be avoided as much as possible.

If a library is locked for some reason so that no user can reach it, you must force open the lock.

Note that this can only be done in an emergency while no other users are working with the symbol libraries.

2.19.10.5 Data connected to a library



Administration of symbol library

Scalefactor
● 1:1
○ Drawing
○ Free

Location and angle
Insert point: x,y,z
☐ Fixed

Type of insert
☒ Update from disk
☐ Explode when inserting

Prefix for block name: kk

Description: Coils

Settings controlling insert

Each library has a number of property settings controlling how a block being inserted from this library should be handled during the installation.

Scale factor

You can choose between having the block inserted in scale 1:1, in the drawing’s scale factor, or with “free” scale factor (the program then prompts for each setting).

Insertion angle

You can choose between setting in the block in a present insertion angle or by having the program prompt for each insertion angle.

Update from the hard disk

You can choose to always update the block from the hard disk (with “insert =”) or to make a copy from the drawing if the block is already inserted in this drawing.

Explode during insertion

You can choose to insert the block “exploded,” that is, inserted in loose parts (with “insert *”).

Additional information

Description

You can store a description line of each library that is shown when you select library.

Prefix for block names

You can also store a block name’s prefix to each library. This prefix is used to give proposal block names when you create a new block. The program proposes a new name based on the prefix and a sequential number that is increased when the name is accepted.

The program stores the highest used sequential number and proposes a block name with a sequential number that is one step higher the next time a block is created in a directory.
The prefix should be different for different directories so that you do not, by mistake, have a block that has the same name in different libraries.

2.19.10.6 Registration of external blocks

If you have blocks that have been created without the symbol library module, these can easily be registered in a symbol library.

Procedure:

Create a directory with the symbol library module’s command for doing this. You can also take an existing library (or directory; it may contain other blocks).

Copy the blocks and potential accompanying slides (that is, “.sld” files with the same name as the blocks) to the directory with the help of the operating system’s commands.

Use the function “UPDATE”. The directory is registered and the new blocks added in at the bottom of the list of blocks in the directory.

If you want to, you can also create an icon for each block with the function “MAKE SLDS”. Note that this erases all objects on the current drawing (including the configuration).

2.19.10.7 Files in a symbol directory

LIBDATA.TXT

List with property setting belonging to this directory and a description line with a description of the directory’s contents. This list can be modified with the function “EDIT LIBRARY”.

BLKLIST.TXT

List of all blocks in the directory. You can switch the order of the lines in this file without influencing the function in the program. During the selection of a block in a directory, the blocks are presented in the order in which they appear in the file. New blocks are placed last in the list.

SLIDES.SLB

A slide library that is updated during the creation of a new block or when the “MAKE SLD”, “UPDATE” or “MAKE SLDS” are run. Contains all slides that belong to blocks registered in the list “BLKLIST.TXT”.

LIB.LOC

Lock files that indicate whether the directory is being used. The text in the file decides if the directory is free or not.

3BSE 011 533R0001

February, 1997